

REMARKS

After the foregoing amendment, claims 1-5 and 8-17 are active in the present application. Claims 1, 9 and 12 have been amended. No new matter has been added by the amendment and the amendment is believed to place the application in condition for allowance. Accordingly, reconsideration and allowance of the application, as amended, are respectfully requested.

Claims 1-5 and 8-17 were rejected under §112, second paragraph, as being indefinite. Particularly, claims 1 and 12 referred to both inner and outer rows of terminals and first and second rows of terminals, and claim 9 recited "the other side," which lacked antecedent basis.

Claims 1, 9 and 12 have been amended to correct the indefiniteness noted by the Examiner. Claims 1 and 12 now refer only to the first and second rows of terminals. Claim 9 now refers to first and second sides of the connection bar. In view of the foregoing amendments to claims 1, 9 and 12, Applicants assert that the claims are no longer indefinite and respectfully request that the rejection under §112 be withdrawn.

Claims 1, 4-8 and 12-15 have been rejected under 35 U.S.C. §102 as being anticipated by JP 05-36886 (Goto). Applicants cancelled claims 6 and 7 in the previously submitted amendment. Applicants respectfully traverse the rejection therefore with respect to claims 1, 4, 5, 8 and 12-15.

This is essentially the same rejection as in the first Office Action, mailed October 7, 2002. Applicants maintain

that the present invention is different from the leadframe of Goto, as described below.

The present invention is directed to a multi-row leadframe. FIG. 10 shows a portion of the leadframe with electrical connections (i.e., wires 84) illustrating how the leadframe would be connected to a die 70. The leadframe is part of a leadframe panel. The leadframe has a paddle ring 86 with leads extending outwardly from a paddle ring outer perimeter and terminating in a first row of terminals 80 generally surrounding the paddle ring outer perimeter.

The first row of terminals 80 is therefore integral with the paddle ring (prior to singulation). The leadframe also has a second row of terminals 82 that surrounds the first row of terminals 80. The second row of terminals 82 is connected to one side of a connection bar 78. Another row of terminals is connected to an opposing side of the connection bar. This other row of terminals is for connection to another die. The two rows of terminals connected to opposing sides of the connection bar can be separated from each other via singulation.

Goto discloses a leadframe having a paddle ring and a tie bar 8. Staggered rows of leads (6,7) extend from both sides of the tie bar 8. The rows on opposite sides will be used for connecting to different die. Thus, a first difference between the present invention and Goto is that both rows of terminals of Goto extend from the tie bar. In contrast, in the present invention, only the second row of terminals extends from the connection bar.

A second difference is that the two rows of leads 6 and 7 extend from one side of the tie bar 8 in the same direction (towards the die) and are of different lengths.

In contrast, in the present invention the first row of terminals extends outwardly from the paddle ring and the second row of terminals extends in the opposite direction, towards the die, from the connection bar. Further, the two rows are formed not by varying the length of the terminals, but by forming the second row of terminals using a connection bar spaced from the paddle ring. While Goto also uses a tie bar spaced from the paddle ring, Goto discloses both the first and second rows of pads extending toward the die from the tie bar.

Goto also discloses a flag portion (pallet 1) that has pads on opposing lateral surfaces thereof. For example, FIG. 4 shows top view of both sides of the pallet 1 and a side or cross-sectional view showing the pads 1a and 1b on the opposing sides. The terminals 6 and 7 are connected to pads 1a and 1b, respectively, on the opposing sides of the pallet 1 (See Goto FIG. 3). Thus, Goto discloses a leadframe that is electrically connected to a semiconductor die in a manner different from that of the present invention.

In view of the above-noted differences between the present invention and Goto, independent claim 1 has been amended to recite the paddle ring outer perimeter including outwardly extending leads that terminate in a first row of terminals generally surrounding the paddle ring outer perimeter. Support for this amendment may be found, for example, in FIGS. 9 and 10 and in paragraphs [0036] and [0037]. Such a configuration is distinctively different from that shown in Goto, as the terminals characterized by the Examiner as the first row of terminals 6 in Goto extend outwardly from leads connected to the connection bar 8 and not from the paddle ring. Put another way, the outer

perimeter of the paddle ring 4 in Goto does not include outwardly extending leads that terminate in the first row of terminals generally surrounding the paddle ring outer perimeter.

Further, the wherein clause of this part of claim 1 ("wherein each of the terminals of the first row of terminals is individually connected to the paddle ring") has been deleted now that the above underlined language has been added.

Independent claim 12 has also been amended to recite the paddle ring outer perimeter including outwardly extending leads that terminate in a first row of terminals generally surrounding the paddle ring outer perimeter and therefore differs structurally from the Goto device.

In view of the foregoing, Applicants submit that claims 1 and 12 are not anticipated by Goto. Accordingly, Applicants respectfully request that the rejection of claims 1, 4, 5, 8 and 12-15 as anticipated by Goto be withdrawn.

Claim 2 was rejected as unpatentable over Goto in view of Osada (JP 402278845). The Office Action states that although Goto does not disclose projections on the outer perimeter of the paddle ring, Osada does. Applicants respectfully traverse the rejection.

Applicants agree that FIG. 12 of Osada shows a paddle ring with projections along an outer perimeter thereof. However, in view of the above-discussed differences between the present invention and Goto, Applicants submit that the combination of Goto and Osada does not teach, suggest or disclose all of the features of claim 2. Accordingly, Applicants respectfully request that the rejection of claim 2 be withdrawn.

Claim 9 was rejected as unpatentable over Goto. Aside from being obvious, the Office Action also asserts that having leads "for connecting to a second integrated circuit die" is a mere statement of use and therefore provides no structural difference. Applicants respectfully traverse the rejection.

Claim 9 is directed to another row of terminals connected to the other side of the connection bar for connecting to a second integrated circuit die. Claim 9 positively recites the feature of the additional row of terminals connected to the connection bar. Thus, the additional row of terminals is structure. This feature of the present invention is believed to be patentable over Goto for the same reasons as independent claim 1. Therefore, Applicants respectfully request that the rejection of claim 9 as unpatentable over Goto be withdrawn.

Claims 10 and 11 have been rejected under 35 U.S.C. §103 as being unpatentable over Goto in combination with U.S. Patent No. 6,005,286 (Kinsman). The Office Action states that Kinsman teaches a frame made of copper and that etching is inherent in copper processes. Applicants respectfully traverse the rejection.

Claims 10 and 11 depend from claim 1 and are believed patentable over the cited references for the same reasons that claim 1 is patentable over the cited references. Accordingly, Applicants respectfully request that the rejection of claims 10 and 11 as unpatentable over Goto and Kinsman be withdrawn.

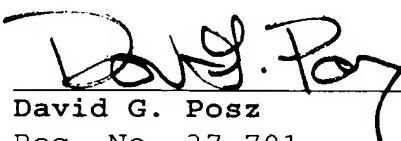
The Examiner should also note that Applicants are submitting proposed drawing changes to FIGS. 3 and 9, along with a separate letter to the Official Draftsperson, for

approval. Specifically, reference numeral "38" has been added to FIG. 3 to identify the second spaced projections discussed, for example, in paragraph [0029] of the specification. Also, reference numerals 77 have been added to FIG. 9 to clearly identify the grooved attachment interfaces at which the first rows of terminals are attached to the connection bars 78-79. These grooved attachment interfaces are clearly delineated from the blank areas of substrate that separate the first and second rows of terminals in FIG. 9, as they are shown as being separate and distinct from the blank areas of substrate by solid lines at either end thereof. Paragraph [0037], which provides support for the fact that the first rows of terminals are attached to the connection bars, has also been amended in a manner that adds no new matter to include specific reference to the grooved attachment interfaces 77.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application, including claims 1-5 and 8-17, is in condition for allowance and such action is respectfully solicited.

Respectfully submitted,

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(Date)

  
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